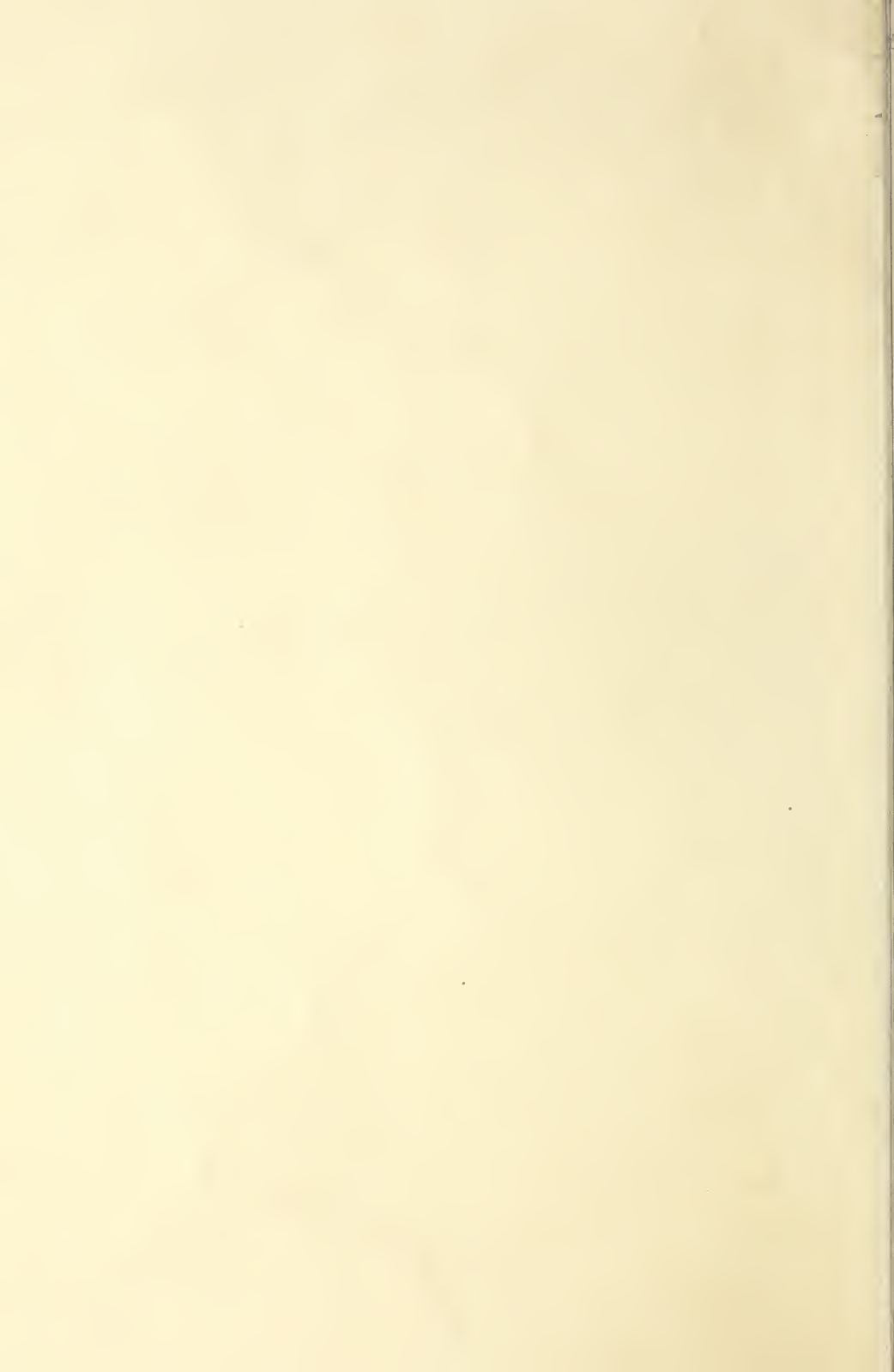
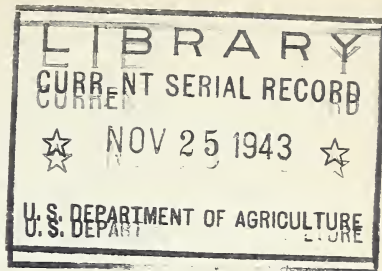


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# Range *and* Livestock Production Practices in the Southwest



GS-NM-284



United States Department of Agriculture and  
Department of the Interior  
In Cooperation With  
The New Mexico College of Agriculture and Mechanic  
Arts and The University of Arizona

## Range Products Vital In Wartime

FULL PRODUCTION of food and fiber to help win the war is now a pressing need. Meat is vital to the armed forces and to civilians who are keeping these forces supplied with equipment and materials. There are no substitutes for many of the livestock products. It is necessary, therefore, to gear production on our range lands to meet this gigantic need and yet retain the range resource for continued use in peace time.

Range forage is marketed on the hoof; thus livestock and range forage production are inseparable and each is dependent upon the other. Each range or pasture now being used for meat or wool production has its vegetation signposts up for all to read as to whether or not it is being allowed to contribute its full share to the war effort. This publication seeks not only to focus attention on the "signposts" that indicate range conditions, but also to outline briefly practices that will assure continued maximum production of forage and livestock as well as improvement of depleted ranges.

# Range and Livestock Production Practices in the Southwest

## Introduction

The livelihood and welfare of livestock producers, irrigation farmers, and town and city dwellers of the Southwest are influenced directly by the production and condition of the watershed range lands. To use but not to deplete the resource, to use and yet improve or maintain the range can and should be the endeavor of livestock ranching.

Proper range and livestock management is merely the adapting of use and stewardship of the range to nature's laws of production. Those laws, if allowed to function, are advantageous rather than adverse to the stockman's interests. Nature's laws of deterioration or destruction are just as sure as those of production and too often are helped along by unwise use of the range.

Perennial grasses usually are the most important range plants. Perennial as well as annual plants develop new root and top growth each year. Unless the individual perennial plant has stored sufficient food from the previous year for its own use, the development of the new root system and top growth during the growing season will be retarded and the volume of forage curtailed. The principles of nutrition that lie back of vigor or abundant health of plants or animals are just as exacting as is the law of gravitation. If, then, the greatest reward to man's labors comes through work with nature, after recognizing nature's rules, it is important to marshal the favorable factors of management in range livestock production. Under this type of management, the labor of handling the range and livestock may actually be lessened.





FS-931379

*Above*—Good management on this range has insured production of forage and conservation of valuable moisture, important alike to the livestock producer, irrigation farmer, and town and city dweller.

*Below*—The sparse cover on an area otherwise similar to that shown above offers little protection to the soil and is making little contribution to the production of livestock.



SCS-NM-9132

## Objectives of Range and Livestock Management

Livestock ranching is a business. The desire of the ranch operator for livelihood, comfort, and enjoyment must be satisfied from this enterprise. Irrigation enterprises, water supplies, protection from floods—all depend on wise use of watershed range lands.

Future generations should receive range lands and their resources unimpaired. This can be assured through proper management of the range resource and without penalizing the income or other interests of the present operators.

Better ranges mean better income. The main objectives of good range and livestock management as they have taken shape in practice and study in the Southwest are as follows:

1. To secure and maintain the highest practicable production of range forage.
2. To secure and maintain the highest practicable livestock production.

To attain these two major objectives it is necessary:

3. To retain or encourage establishment of the more desirable forage species on each range area.
4. To maintain the highest plant vigor possible in the course of grazing.
5. To check or prevent excessive erosion or water runoff.



GS-NM-233

An ample forage supply helps to control erosion and maintains both forage and livestock production.



## Essential Management Practices To Secure Maximum Forage Production

Ranching is a continuing business and the continued sale of livestock products can be maintained only if the range itself is kept productive. Injury to forage plants or to the soil is detrimental to forage production and consequently to the business of ranching. Injured or weak forage plants produce less food. Fewer pounds of growth produced by forage plants mean less feed for grazing livestock.

Any grazing obviously affects the natural growth of vegetation although not necessarily adversely. The following practices will permit the greatest forage production compatible with grazing use.

### 1. Suggested practices for use of summer ranges.

- a. **BEGIN GRAZING WHEN NEW FORAGE GROWTH IS ADEQUATE** (perennial grasses well along in growth, browse approximately in full leaf) and the soil is firm enough so that injury to ground surface is negligible.
- b. **ALLOW SEED TO MATURE ON A MAJORITY OF THE DESIRABLE FORAGE PLANTS.**
- c. **LEAVE AT LEAST ONE-FOURTH OF THE SEED-STALKS OR PLANTS UNGRAZED** at the end of the grazing season to insure plant vigor and reproduction. The cover left helps hold moisture and increases water penetration.
- d. **ALLOW A PART OF THE RANGE TO REST EACH YEAR** during the early part of the growing season, or at time of seed formation, alternating this partial deferment between several pastures if possible.
- e. **LEAVE ENOUGH ADDITIONAL GROUND COVER IN CRITICAL PLACES SO THAT LOSS OF SOIL OR WATER IS MINIMIZED.**
- f. **RESEED DAMAGED PARTS OF THE RANGE WHERE PRACTICABLE** if it is evident that natural revegetation would be too slow.
- g. **DEVELOP ADEQUATE, WELL-DISTRIBUTED STOCK-WATER SUPPLIES WHERE FEASIBLE.**





SCS-NM-5847

Ranges can be improved. *Above*—The thinned stand and low vigor of the forage on this range resulted from too early and too heavy grazing. *Below*—More moderate grazing and delay in use of the browse until it was in approximately full leaf have restored the forage.



SCS-NM-5847-B





SCS-ARIZ-409-A

*Above*—On ranges where the forage is a mixture of grama and other grasses, too heavy use may eliminate all but the more grazing-resistant grama. The forage produced on such ranges is even less on high plateaus where, even though the sod is heavy, the growth of the grama itself is restricted.

*Below*—Such ranges respond to deferred use and other conservation practices by the reestablishment of stands of a variety of higher forage-producing grasses.



SCS-ARIZ-409-B





SCS-NM-9464

At the end of each grazing season at least one-fourth of the seedstalks or plants should be left ungrazed to insure plant vigor and reproduction. The cover left increases water penetration. The result is greater production.

*Above*—Grazing should be stopped on this range so as to leave the amount of vegetation shown.

*Below*—This range has been used too closely, and not enough seed has been allowed to mature on a majority of the desirable forage plants.



SCS-NM-5198





SCS-NM-6956

Some form of rotation-deferred grazing should be adopted on ranges like these. Photographs on this page are repeats in successive years of the scene shown in the lower photograph on the preceding page. Overgrazing has resulted in a progressive downward trend in plant vigor and production.



SCS-NM-9391



## 2. Suggested practices on yearlong grazing areas.

- a. **ADOPT SOME FORM OF ROTATION-DEFERRED PLAN OF GRAZING**—not grazing the same area or pasture at the same time in successive years, particularly withholding use during a part or all of the growing season.
- b. **LEAVE AT LEAST ONE-FOURTH OF THE SEED-STALKS OR PLANTS UNGRAZED** to insure vigorous plants, help minimize evaporation, and increase water penetration.
- c. **LEAVE ENOUGH ADDITIONAL GROUND COVER IN CRITICAL PLACES SO THAT LOSS OF SOIL OR WATER IS MINIMIZED.**
- d. **RESEED AREAS THAT WILL SUPPORT MORE DESIRABLE FORAGE COVER** where natural improvement would be extremely slow.
- e. **DEVELOP ADEQUATE, WELL-DISTRIBUTED STOCK-WATER SUPPLIES WHERE FEASIBLE.**

### **Appraising Present and Potential Range Conditions and Allowable Degree of Use**

A range that has long been used too heavily generally has lost some of the most desirable forage species—often the taller grasses. This is generally accompanied by an increase of less desirable or nonedible plants such as creosotebush, snakeweed, rabbitbrush, sagebrush, mesquite, burroweed, or even poisonous plants. Such changes mean lower production.

Any development toward a more productive range is indicated by a strong, vigorous condition of desirable species which are competing favorably with the less desirable plants.

The kinds of plants that are present on a range at any given time are an indication of past use and of present range conditions as compared to possible development. These plants and the soil condition should be observed in determining the present state of vigor of the range and the degree of use permissible without detriment to the plants or to their value in holding productive soils in place.

Knowledge of how different kinds of plants grow when unused or not harmfully used helps in determining the present stage of range development and the extent to which the range can be improved to produce more and better plants. Much of the information needed in judging the vigor of a forage stand must come from an analysis of plant species and from knowing how these plants grow in any particular part of the country. Too much importance cannot be placed on getting help and information from authoritative sources before final decisions are made.

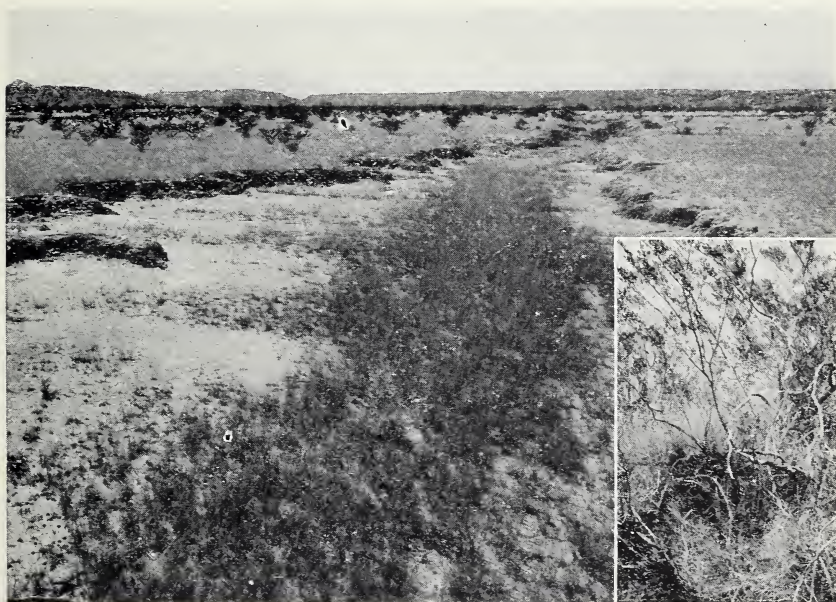
The following steps will be found helpful in appraising range conditions and in determining the adjustments in use necessary to bring about improved conditions:

1. Compare the condition of a given pasture as to kinds of plants, density, and especially volume production, with other ranges and, what is more important, with protected or moderately used areas in the immediate vicinity.
2. Check for good volume growth, early vigorous growth, and good ground cover of the older, established plants. Note which plants are becoming weak or are dying and which kinds are becoming stronger. Determine whether the perennial grasses are reproducing or undesirable species are increasing.
3. Get information from the State agricultural college or from some other authority on the height of growth or amount of stubble of present desirable species which should be left ungrazed.
4. After completing the examination, to insure beneficial changes, adopt the management practices needed to bring about the desired condition.



SCS-ARIZ-3250

*Above*—Smaller production and greater erosion is the result when desirable plants and grasses are forced out and less desirable or nonedible plants increase. *Below*—Grass will come back, even in a creosotebush area, if given protection.



SCS-NM-12121; SCS-ARIZ-4245





SCS-NM-12116

*Above*—Range in excellent condition. Heavy production of a mixture of very desirable grasses now ready for use.

*Below*—Range in good condition. Good management should soon improve the quality of this range to equal the excellent range shown above.



SCS-NM-12117





SCS-NM-12119

*Above*—Range in fair condition, as compared with its potential development. Note presence of snakeweed and the low volume growth.

*Below*—Range in poor condition. Scattered grass crowns are left, but the range is almost in a stage of denudation.



SCS-NM-12120



SCS-NM-12118

Damaged range lands should be reseeded where practicable.

*Above*—Grass stand obtained by drilling seed in a denuded range area.

*Below*—Vegetation on this deep-contoured, seeded swale will provide more feed and will check excessive runoff of water and silt.



SCS-ARIZ-4253





SCS-NM-6375-A

Before and after. Planting and protection can bring surprising results in revegetation of range areas.



SCS-NM-6375-B

## **Livestock Management Practices To Secure Maximum Production**

The preceding paragraphs have outlined and emphasized certain objectives and practices that are conducive to range plant production and which, therefore, have favorable effects on livestock production. There are, in addition, definite, well-known livestock management practices decidedly beneficial in livestock production that can be followed. In the past much emphasis has been placed on breeding. This emphasis on "good blood" has had and is having decidedly favorable results. Nutrition as well as breeding leaves its impression upon the livestock, but its effect upon range livestock production has not been so thoroughly emphasized.

The animal must first have enough to live on, but that alone is not enough for a profitable livestock business. The animal should also eat enough more to insure good production. This production may take the form of added body weight, growth, production of wool or mohair, the nourishing of the unborn young, or the suckling of young. Little more than 40 percent of the feed of a well-nourished cow generally goes into production. All too often, however, on ranges below par, only about half of this amount is available for production after maintenance requirements are satisfied. A cow, ewe, or doe that has adequate reserves of minerals, vitamins, and fat in her body generally will give the best account of herself in production. Certain proteins and minerals are often needed to supplement forage, because forage alone may be lacking in some of these necessary nutrients.

Although each individual practice in taking care of livestock may contribute only a small part of the total, these practices in the aggregate may mean the difference between profit or loss for the operator and greater or reduced production of meat for the Nation. Although ample forage is the first essential in good range livestock management, the following points should also be stressed:

1. **PROVIDE SUPPLEMENTS, SUCH AS PHOSPHORUS OR CALCIUM** or both, to meet deficiencies on ranges lacking in these minerals.





SCS-NM-R-61-A

Changes in grass composition and increased volume growth are here shown taking place under improved management practices.



SCS-NM-R-61-B





SCS-NM-8693

The plant litter from grasses and annual weeds, if not overused, helps prevent excessive erosion and runoff and enables the more desirable range forage to get a start. These two scenes show a gullied area making progress toward becoming productive grazing land once again.



SCS-NM-8693 B





SCS-UTAH-418

These repeat photographs illustrate the fact that the primary goal of livestock ranching should be to use but not to deplete the resources, to use and yet improve the range.



SCS-UTAH-418-D

2. **PROVIDE PROTEIN** and other feed, such as cottonseed cake, if practicable in the winter when forage is covered with snow and at other times during the year when forage is dry.
3. **PROVIDE A HIGHLY CONCENTRATED PROTEIN FEED TO NEWLY WEANED CALVES AND LAMBS.**
4. **STRIVE FOR UNIFORM CALF AND LAMB CROPS** by employing a controlled breeding season of approximately 3 months.
5. **SET FALL WEANING DATE APPROXIMATELY BETWEEN OCTOBER 15 AND NOVEMBER 1** so the next year's calf and lamb weights are not penalized.
6. **HOLD, BUY, OR SELL STEER CALVES AS THE FIRST STEP IN ADJUSTING NUMBERS** upward or downward in relation to available feed on cattle or cattle-and-sheep operations. If operating sheep only, make adjustments between ewe, lamb, and old ewe numbers to meet the feed situation.
7. **KEEP SIRES IN STRONG, VIGOROUS CONDITION.**  
There may be times when a supplement of concentrated feed is necessary.

### **Man's Part in the Program**

Man cannot influence the weather, but he can control his livestock. Livestock numbers and livestock handling methods are the key to obtaining results from vegetation in terms of livestock production and monetary returns. There is a close relation in ranching between erosion, forage production, livestock production, and profits which, for any ranch, centers around and is influenced by the handling of the grazing herd or flock. In the last analysis, the operator is himself the controlling factor. He not only determines to a large extent what rewards he gets, but also determines the future condition of the land resources. A livestock operator is a professional land manager. Appreciation and full understanding of the



natural laws of forage production are essential to successful ranch management. Every stockman who is producing the maximum of food and fiber today and maintaining his range resources for maximum production is helping to win the war.



Profitable herds are the end product of improved range practices.

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